

Claims

1. An apparatus for successively making plastic bags each of which includes a bottom gusset portion incorporated into superposed two layers of panel portion, the apparatus comprising:

panel material feeding means by which web means of panel material is fed longitudinally thereof; and

panel material guide means by which the web means of panel material is guided to be folded and folded back along a longitudinal folded line and a longitudinal folded back line when being fed so that a folded portion can be formed in the web means of panel material and folded into halves, the plastic bag including the bottom gusset portion formed by the folded portion and incorporated into the layers of panel portion which are formed by the web means of panel material.

2. The apparatus as set forth in claim 1 further comprising:

side gusset material supply means by which sheets of side gusset material are supplied to the web means of panel material to extend widthwise thereof, the plastic bag further including side gusset portions formed by the sheets of side gusset material.

3. The apparatus as set forth in claim 1 or 2 wherein the panel material guide means comprising:

first guide means by which the web means of panel material is guided to be folded along the longitudinal folded line when being fed; and

second guide means by which the web means of panel material is guided to be folded back along the longitudinal folded back line when being fed and after being folded so that the folded portion can be formed in the web means of panel material and folded into halves.

4. An apparatus for successively making plastic bags each of which

includes a bottom gusset portion incorporated into superposed two layers of panel material, the apparatus comprising:

panel material feeding means by which web means of panel material is fed longitudinally thereof, the web means of panel material being superposed into two layers each of which has opposite side edges;

panel material guide means by which one of the layers of panel material is guided to be folded and folded back along a longitudinal folded line and a longitudinal folded back line near one of the side edges thereof when being fed so that a folded portion can be formed in said one of the layers of panel material and folded into halves, the folded portion having a free side edge formed by said one of the side edges, said folded portion being interposed between the layers of panel material; and

longitudinal seal means by which the free side edge is heat sealed with the corresponding side edge of the other layer of panel material before or after the folded portion is folded into halves, the plastic bag including the bottom gusset portion formed by the folded portion and incorporated into the layers of panel portion which are formed by the web means of panel material.

5. The apparatus as set forth in claim 4 further comprising:

side gusset material supply means by which sheets of side gusset material are supplied to the web means of panel material to extend widthwise thereof, the sheets of side gusset material being interposed between the layers of panel material; and

cross seal means by which the layers of panel material are heat sealed with the sheets of side gusset material, the plastic bag further including side gusset portions formed by the sheets of side gusset material.

6. The apparatus as set forth in claim 4 or 5 wherein the panel material guide means comprising:

first guide means by which said one of the layers of panel material is guided to be folded along the longitudinal folded line when being fed; and

second guide means by which said one of the layers of panel material is guided to be folded back along the longitudinal folded back line when being fed and after being folded so that the folded portion can be formed in said one of the layers of panel material and folded into halves.

7. The apparatus as set forth in claim 5 wherein the panel material guide means comprising:

first guide means by which said one of the layers of panel material is guided to be folded along the longitudinal folded line when being fed and after the sheet of side gusset material is supplied; and

second guide means by which said one of the layers of panel material is guided to be folded back along the longitudinal folded back line when being fed and after being folded so that the folded portion can be formed in said one of the layers of panel material and folded into halves, the folded portion being combined with the sheet of side gusset material by means of folded and folded back procedures in which said one of the layers of panel material is folded and then folded back by the first and second guide means.

8. The apparatus as set forth in claim 7 wherein said one of the layers of panel material is superposed with the other layer of panel material before being folded, to have said one of the side edges protruding beyond the corresponding side edge of the other layer of panel material at a distance, said one of the layers of panel material being then folded by the first guide means at a width which corresponds to the distance between said one of the side edges and the corresponding side edge while the other layer of panel material is folded by the first guide means at a width which is half as much as

the distance so that said one of the side edges can be coincided with the corresponding side edge, said one of the layers of panel material being then folded back by the second guide means so that the folded portion can be formed in said one of the layers of panel portion and folded into halves while the other layer of panel material is unfolded for restoration so that the folded portion can be combined with the sheet of side gusset material and interposed between the layers of panel material.

9. An apparatus for successively making plastic bags each of which includes a bottom gusset portion incorporated into superposed two layers of panel portion, the apparatus comprising:

panel material feeding means by which web means of panel material is fed longitudinally thereof, the web means of panel material being superposed into two layers each of which has opposite side edges;

panel material guide means by which one of the layers of panel material is guided to be folded and folded back along a longitudinal folded line and a longitudinal folded back line near one of the side edges thereof when being fed so that a first folded portion can be formed in said one of the layers of panel material and folded into halves, the first folded portion having a first free side edge formed by said one of the side edges, said one of the layers of panel material being guided by the panel material guide means to be folded and folded back along a longitudinal folded line and a longitudinal folded back line near the other side edge thereof when being fed so that a second folded portion can be formed in said one of the layer of panel material and folded into halves, said second folded portion having a second free side edge formed by the other side edge, the first and second folded portions being interposed between the layers of panel material; and

longitudinal seal means by which the first free side edge is heat sealed with the corresponding side edge of the other layer of panel material

before or after the first folded portion is folded into halves, the second free side edge being heat sealed with the corresponding side edge of the other layer of panel material by the longitudinal seal means before or after the second folded portion is folded into halves, the plastic bag including the bottom gusset portion formed by the first or second folded portion and incorporated into the layers of panel portion which are formed by the web means of panel material.

10. An apparatus for successively making plastic bags each of which includes a bottom gusset portion incorporated into superposed two layers of panel portion, the apparatus comprising:

panel material feeding means by which web means of panel material is fed longitudinally thereof, the web means of panel material being superposed into two layers each of which has opposite side edges;

panel material guide means by which one of the layers of panel material is guided to be folded and folded back along a longitudinal folded line and a longitudinal folded back line near one of the side edges of the web means of panel material when being fed so that a first folded portion can be formed in said one of the layers of panel material and folded into halves, the first folded portion having a first free side edge, the other layer of panel material being guided by the panel material guide means to be folded and folded back along a longitudinal folded line and a longitudinal folded back line near the other side edge of the web means of panel material when being fed so that a second folded portion can be formed in the other layer of panel material and folded into halves, the second folded portion having a second free side edge, the first and second folded portions being interposed between the layers of panel material; and

longitudinal seal means by which the first free side edge is heat sealed with the corresponding side edge of the other layer of panel material

before or after the first folded portion is folded into halves, the second free side edge being heat sealed with the corresponding side edge of said one of the layers of panel material by the longitudinal seal means before or after the second folded portion is folded into halves, the plastic bag including the bottom gusset portion formed by the first or second folded portion and incorporated into the layers of panel portion which are formed by the web means of panel material.

11. An apparatus for successively making plastic bags each of which includes a bottom gusset portion incorporated into superposed two layers of panel portion, the apparatus comprising:

panel material feeding means by which web means of panel material is fed longitudinally thereof, first and second folded lines being assumed on the web means of panel material to extend longitudinally of the web means of panel material, an intermediate folded back line being assumed on the web means of panel material to extend longitudinally of the web means of panel material and between the first and second folded lines; and

panel material guide means by which the web means of panel material is guided to be folded and folded back along the first and second folded lines and the intermediate folded back line when being fed so that a folded portion can be formed in the web of panel material and between the first and second folded lines and folded into halves, the web means of panel material being superposed into two layers between which the folded portion is interposed, the plastic bag including the bottom gusset portion formed by the folded portion and incorporated into the layers of panel portion which are formed by the web means of panel material.

12. The apparatus as set forth in claim 11 further comprising:

side gusset material supply means by which sheets of side gusset material are supplied to the web means of panel material to extend widthwise

thereof, the sheets of side gusset material being interposed between the layers of panel material; and

cross seal means by which the layers of panel material are heat sealed with the sheets of side gusset material, the plastic bag further including side gusset portions formed by the sheets of side gusset material.

13. The apparatus as set forth in claim 11 or 12 wherein the panel material guide means comprising:

first guide means by which the web means of panel material is guided to be folded along the first folded line when being fed;

second guide means by which the web means of panel material is guided to be folded back along the intermediate folded back line when being fed and after being folded; and

third guide means by which the web means of panel material is guided to be folded along the second folded line when being fed and after being folded back so that the folded portion can be formed in the web means of panel material and folded into halves.

14. The apparatus as set forth in claim 12 wherein the panel material guide means comprising:

first guide means by which the web means of panel material is guided to be folded along the first folded line when being fed and after the sheet of side gusset material is supplied;

second guide means by which the web means of panel material is guided to be folded back along the intermediate folded back line when being fed and after being folded; and

third guide means by which the web means of panel material is guided to be folded along the second folded line when being fed and after being folded back so that the folded portion can be formed in the web means of panel material and folded into halves, the folded portion being combined

with the sheet of side gusset material by means of folded and folded back procedures in which the web means of panel material is folded, then folded back and folded again by the first, second and third folded guide means.